



## INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

(51) International Patent Classification : <b>G07F 7/10</b>	<b>A1</b>	(11) International Publication Number: <b>WO 93/07596</b> (43) International Publication Date: <b>15 April 1993 (15.04.93)</b>
<p>(21) International Application Number: PCT/EP92/02281</p> <p>(22) International Filing Date: 2 October 1992 (02.10.92)</p> <p>(30) Priority data: 2940/91-6 4 October 1991 (04.10.91) CH</p> <p>(71)(72) Applicant and Inventor: CONDOLF, Dino [IT/CH]; Via Cantonale, CH-6964 Davesco-Soragno (CH).</p> <p>(74) Agents: BAGGIOLINI, Raimondo et al.; Fiammenghi-Fi-ammenghi, Via San Gottardo 15, CH-6900 Lugano (CH).</p> <p>(81) Designated States: AT, AU, BB, BG, BR, CA, CS, DE, DK, ES, FI, GB, HU, JP, KP, KR, LK, LU, MG, MN, MW, NL, NO, PL, RO, RU, SD, SE, US, European patent (AT, BE, CH, DE, DK, ES, FR, GB, GR, IE, IT, LU, MC, NL, SE), OAPI patent (BF, BJ, CF, CG, CI, CM, GA, GN, ML, MR, SN, TD, TG).</p>		

## Published

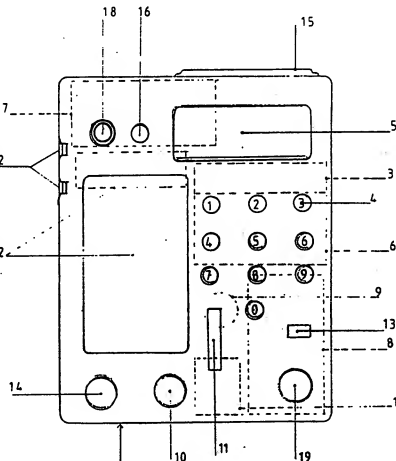
*With international search report.*

*Before the expiration of the time limit for amending the claims and to be republished in the event of the receipt of amendments.*

(54) Title: ELECTRONIC WALLET

## (57) Abstract

The electronic wallet is a calculating device with a display equipped with memory and comprises means capable of emitting and receiving impulses, and circuits capable of causing the emission or reception of the same impulse to induce variations of equal absolute value but having opposite signs in the number recorded in the memory respectively. The access to the operations is protected by an electronic code known only to the owner, and the frequency and other characteristics of said impulses varies automatically over time according to a secret preset logical sequence. The wallet is equipped with a printing unit (2) that transcribes and stores all the operations carried out, and with a second unit (7) for issuing mini-checks.



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Electronic Wallet

Presently the accounting units that make up the liquidities available to an individual consist physically of coins, banknotes or checks, so that they can be used by their owner in all his activities that involve the use of money.

5           This is one of the fundamental reasons for the necessity of the existence of the "monetary mass" in all economically organized countries.

          The existence of this mass, whether it be paper or metal, necessarily always involves problems that have never  
10       been solved, such as the risk of theft, loss, "money laundering" etc.

          With the present invention, the inventor has attempted to provide a new, modern and advantageous solution to the problem of the circulation of the above mentioned  
15       "liquid," by creating an electronic device which essentially makes it possible to be able to eliminate the above mentioned monetary mass, if desired.

          This device, in whose memory the situation of the liquidities is recorded, or else the number of accounting  
20       units that are available to its owner, is designed so as to be able to execute and record all cash operations of any amount (contained in the above named number), both debit and credit, by acting in tune with another identical device carried by the counterpart who is participating in the above  
25       mentioned operations.

          In other words, the device, which is thus called

"electronic wallet," is designed so that, for example if person A needs to make a payment to person B who also has the same kind of wallet, the payment takes place electronically, subtracting the desired amount from the balance in the memory of A's wallet and adding the same amount to the balance in the memory of B's wallet.

The wallets of both persons, if they are presented in the financial institution, for example a bank, that issued them, attest at any given time, through the balance stored in the memory, to the situation of the real credit balance of A and B.

The advantages that such an invention present are obvious, both from the vantage point of convenience and of resistance to theft and fraud. From an electronic wallet according to the invention, in fact, only a number of accounting units less than or equal to the number of accounting units really stored in the memory, i.e. credit, can be subtracted.

The invention is comprised of a calculating electronic device and a display equipped with memory, characterized in that it is provided with first means capable of emitting and receiving impulses, and second means capable of causing both the emission and the reception of these impulses having certain physical characteristics to induce analogous numerical signals in the device itself that would modify to a pre-determined extent a number entered into the memory; this device would be called an electronic wallet.

Referring to the attached drawing we will proceed to describe in detail the functioning of a preferred

embodiment that is neither limiting nor binding with respect to the concepts expressed in the attached claims.

The drawing represents a front view of the device that is the object of the invention.

5               The wallet is activated in its memory 3, by card 6, with the preset number of accounting units of credit available in the financial institution that issues the wallet itself.

10              This activation is analogous to that made by a magnetic card and does not require more detailed explanation, since this procedure is well known by experts in the field. Mention is made only of the fact that this can take place through sound waves, infrared rays etc. that act on card 6.

15              Owner A of the wallet then, for example, in order to make a payment to another person B, presses entry button 10, and as a result display 5 lights up, and the luminous radiation for this lighting is capable of being radiated in at least two colors, red and green, to be used according to the logic and the preferences of the individual.

20              Then, by means of numeric keypad 4 an access number or electronic code is entered, which is known only to the owner for obvious reasons of security against theft.

25              At this point payment can then be made, by entering on the same keypad 4 the number equal to the amount of the operation. Once this number has been entered, operation key 11 is pressed and the device emits impulses corresponding to said amount, either electromagnetic or sound waves or infrared radiation.

From the number in the memory, an amount of units

equal to the amount of the operation is subtracted.

The above mentioned impulses are received and translated into a analogous numerical signal by B's wallet, which operates by assigning a credit, and the above mentioned entry key 10 will have also have to have been pressed previously, twice for example, to predispose the device to receive a credit, and the owner will have also entered on his keypad 4 the number equal to the amount of the operation in question, and then push the operation key.

The number in the memory of this latter wallet will then be increased by the amount entered.

Both wallets will remain activated for possible additional operations for a limited time, for example 3 to 5 minutes, and then they will turn off automatically.

The device, obviously, may execute other functions, such as correction key (13) to change the number before emitting or receiving impulses from the other wallet, or the like.

A further function is, for example, exchange key 18; by pressing this key and then by pressing another key 14 a certain number of times, it will be possible to multiply or divide an amount by the exchange rate of other currencies in relation to the base currency with which the wallet operates.

It is important that in the device a small printing device 2 is contained that is capable of transcribing, then storing everything it prints, every variation in the number is recorded in the memory as well as the characteristic parameters - operation number, date, type of operation, result in the memory and the like - of all the

operations that have induced the above mentioned variations.

The function of this unit carries out, in a certain sense, the task of the "black box" in aircraft.

Also there is provision for the existence of  
5 additional unit 7 capable of printing and issuing sheets of paper and cards containing desired data and/or numbers.

With this last unit, that can be activated by additional button 19, for example, the owner can issue true mini-checks of his own that are securely covered in that they  
10 cannot be issued unless a corresponding credit exists in the memory, and these mini-checks can serve as cash for making payments to persons or companies that do not have an electronic wallet.

It should be pointed out that it is provided that  
15 the device be equipped with an electronic unit capable of distinguishing among a large number of impulses with identical characteristics, and to allow for the reception only of the closest signal. This makes it possible to avoid illicit intrusions into the operations by third parties. For  
20 practical purposes, it is also provided that two wallets cannot exchange impulses when they are placed at a distance greater than a certain reference distance. This distance can be set to about 1 m, for example.

The inventor has also provided that the frequencies  
25 and the other physical characteristics of the emitted signal vary automatically over time according to a secret preset logical sequence.

This mechanism also serves to avoid intrusions and unauthorized uses by third parties.

A final mechanism to achieve maximum security is the fact that all the circuits with which the device is equipped are connected to an internal part (for example a covering or a frame) of shell 1 of the device itself so that  
5 any event that causes it to break also cause the circuits themselves to be interrupted or short-circuited.

It is understandable that both the functions of the device and their interconnections can vary in large measure to meet all possible requirements, thus they may differ from  
10 the example described to this point but they remain within the scope of what is expressed in the attached claims.

To communicate data "by wire" two outlets 12 are provided which serve either for long-distance operations or for other connections, for example for the transmission of  
15 data to the institution that issued the wallet.

Given that the device is portable, it is obvious that it is powered by batteries (8).



Claims

1. Electronic calculating device and display equipped with memory, characterized in that it is equipped with first means capable of emitting and receiving impulses and of second means capable of causing both the emission and reception of said impulses having certain physical characteristic to induce signals of an analog numerical type in the device itself that modify to a preset extent a number recorded in the memory, and this device is called an electronic wallet.

2. Device according to claim 1, in which the above mentioned second means with which it is equipped are such that they cause the emission and reception of the same sign to induce variations with the same absolute value but having opposite signs in the number recorded in the memory respectively.

3. Device according to any of the preceding claims, in which the above mentioned second means are circuits capable of transforming the above mentioned impulses into the above mentioned variations in the number recorded in the memory.

4. Device according to any of the preceding claims, in which the above mentioned impulses generated by the first means are electromagnetic waves, or infrared rays or sound waves, without any type of fixed connection for their transmission.

5. Device according to any of the preceding claims, comprising a numerical keypad (4), and when it is

activated, impulses of a determined kind and magnitude can be emitted or received, which can vary depending on the keys pressed.

6. Device according to claim 5, comprising a  
5 printing unit (2) that transcribes, storing everything it prints, every variation in the number recorded in the memory as well as the characteristic parameters - number of the operation, date, type of operation, result in the memory and the like - of all the operations that have induced each of  
10 the above mentioned variations.

7. Device according to claim 6, which also contains a unit (7) capable of printing sheets or cards carrying desired numbers and/or data.

8. Device according to claim 7, in which there  
15 exists at least one key (18), connected to circuits capable of carrying out mathematical operations, that when it is activated, the numbers entered by the above mentioned keypad are modified by being multiplied or divided by preset numerical coefficients.

9. Device according to claim 8, in which the above  
20 mentioned numerical coefficients are the exchange rates of other currencies with respect to a reference currency on the basis of which the device carries out its operations.

10. Device according to any of the preceding  
25 claims, comprising an electronic access code, without the activation of which it is not possible to carry out any operations.

11. Device according to any of the preceding claims, wherein all the circuits with which it is equipped

are connected to an internal part of the shell (1) of the device, so that any event that causes its breakage causes the circuits themselves to be interrupted or short-circuited.

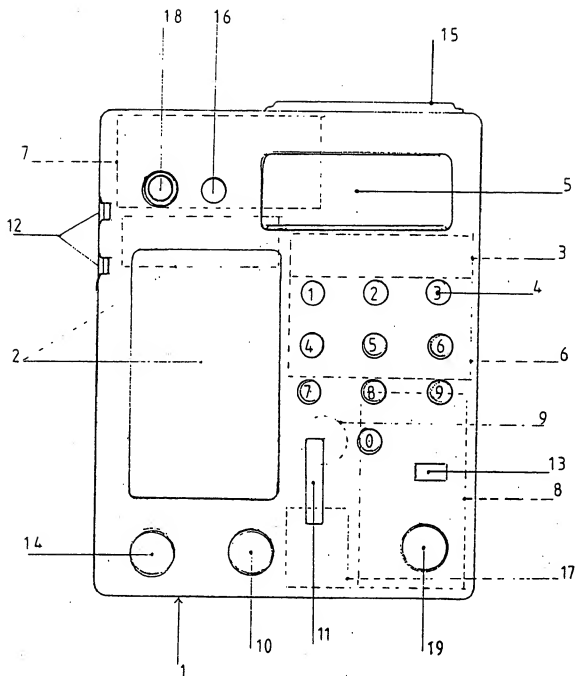
12. Device according to any of the preceding claims, that also comprises an electronic unit capable of distinguishing among a plurality of impulses with identical characteristics and of making possible the reception of only the signal originating from the emitter located at a lesser distance.

13. Device according to claim 12, wherein the frequencies or other physical characteristics of the signal emitted vary automatically over time according to a preset logical sequence known only to the manufacturer of the device.

14. Device according to any of the preceding claims, equipped with means capable of illuminating the display device (5) with luminous radiations that can have at least two different colors.

15. Device according to claim 14, comprising a shell (1), a printing unit (2), a memory unit (3), a keypad (4), a visual display (5), a card (6), a mechanism for issuing mini-checks (7), two batteries (8), a reserve battery (9), an enter button (10), an operation button (11), two connection outlets (12).


16. Electronic wallet comprising two outlets (12), one for the unloading and preservation of data, the other for long-distance transmissions of operations with other electronic wallets over a particular telephone band, Modem, Swift or other.



## INTERNATIONAL SEARCH REPORT

International Application No

PCT/EP 92/02281

<b>I. CLASSIFICATION OF SUBJECT MATTER</b> (If several classification symbols apply, indicate all) <sup>6</sup>		
According to International Patent Classification (IPC) or to both National Classification and IPC Int.Cl. 5 G07F7/10		
<b>II. FIELDS SEARCHED</b>		
Minimum Documentation Searched <sup>7</sup>		
Classification System	Classification Symbols	
Int.Cl. 5	G07F	
Documentation Searched other than Minimum Documentation to the Extent that such Documents are Included in the Fields Searched <sup>8</sup>		
<b>III. DOCUMENTS CONSIDERED TO BE RELEVANT<sup>9</sup></b>		
Category <sup>10</sup>	Citation of Document, <sup>11</sup> with indication, where appropriate, of the relevant passages <sup>12</sup>	Relevant to Claim No. <sup>13</sup>
X	WO,A,8 102 070 (W. BENTON) 23 July 1981 see the whole document ---	1-3,5,10
X	US,A,4 320 387 (W.S. POWELL) 16 March 1982 see abstract; claims; figures see column 7, line 44 - column 12, line 38 ---	1-5,10, 13,16
A	---	15
X	EP,A,0 172 670 (TECHNION RESEARCH & DEVELOPMENT FOUNDATION) 26 February 1986 see the whole document ---	1-3,5, 10,11
A	WO,A,8 203 484 (W. BENTON) 14 October 1982 see abstract; claims; figures 1-7 ---	1-7,10, 15,16
-/-		
<p><sup>10</sup> Special categories of cited documents: <sup>10</sup></p> <p>"A" document defining the general state of the art which is not considered to be of particular relevance</p> <p>"E" earlier document but published on or after the international filing date</p> <p>"L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)</p> <p>"O" document referring to an oral disclosure, use, exhibition or other means</p> <p>"P" document published prior to the international filing date but later than the priority date claimed</p> <p>"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention</p> <p>"X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step</p> <p>"Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art.</p> <p>"A" document member of the same patent family</p>		
<b>IV. CERTIFICATION</b>		
Date of the Actual Completion of the International Search  14 JANUARY 1993	Date of Mailing of this International Search Report  02.02.93	
International Searching Authority  EUROPEAN PATENT OFFICE	Signature of Authorized Officer  DAVID J.Y.H. 	

III. DOCUMENTS CONSIDERED TO BE RELEVANT (CONTINUED FROM THE SECOND SHEET)		Relevant to Claim No.
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A	WO,A,8 303 694 (W. BENTON) 27 October 1983 ---	
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**ANNEX TO THE INTERNATIONAL SEARCH REPORT  
ON INTERNATIONAL PATENT APPLICATION NO.**

EP 9202281  
SA 65291

This annex lists the patent family members relating to the patent documents cited in the above-mentioned international search report. The members are as contained in the European Patent Office EDP file on  
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